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Please find below and/or attached an Office communication concerning this application or proceeding.

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	Application No.	Applicant(s)
	10/711,372	RICHARDSON, STEVEN D.
Office Action Summary	Examiner	Art Unit
_	Joshua J. Michener	3644
The MAILING DATE of this communication app Period for Reply	ears on the cover sheet with the o	correspondence address
A SHORTENED STATUTORY PERIOD FOR REPLY WHICHEVER IS LONGER, FROM THE MAILING DA  - Extensions of time may be available under the provisions of 37 CFR 1.13 after SIX (6) MONTHS from the mailing date of this communication.  - If NO period for reply is specified above, the maximum statutory period v  - Failure to reply within the set or extended period for reply will, by statute.  Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS COMMUNICATION 36(a). In no event, however, may a reply be the vill apply and will expire SIX (6) MONTHS from a cause the application to become ABANDONE	N. mety filed n the mailing date of this communication. ED (35 U.S.C. § 133).
Status	•	
Responsive to communication(s) filed on 25 Ja     This action is <b>FINAL</b> . 2b) ☑ This     Since this application is in condition for alloward closed in accordance with the practice under E	action is non-final. nce except for formal matters, pr	
Disposition of Claims		
4) ⊠ Claim(s) 1-40 is/are pending in the application 4a) Of the above claim(s) 14-17,27-36,39 and 5  5) □ Claim(s) is/are allowed.  6) ☒ Claim(s) 1-13,18-26,37 and 38 is/are rejected.  7) □ Claim(s) is/are objected to.  8) □ Claim(s) are subject to restriction and/o	40 is/are withdrawn from conside	eration.
Application Papers	•	
9) The specification is objected to by the Examine 10) The drawing(s) filed on is/are: a) acc Applicant may not request that any objection to the Replacement drawing sheet(s) including the correct 11) The oath or declaration is objected to by the Example 11.	epted or b) objected to by the drawing(s) be held in abeyance. So tion is required if the drawing(s) is o	ee 37 CFR 1.85(a). bjected to. See 37 CFR 1.121(d).
Priority under 35 U.S.C. § 119		
12) Acknowledgment is made of a claim for foreign a) All b) Some * c) None of:  1 Certified copies of the priority document 2 Certified copies of the priority document 3. Copies of the certified copies of the priority application from the International Burea * See the attached detailed Office action for a list	ts have been received. ts have been received in Applica rity documents have been receiv u (PCT Rule 17.2(a)).	tion No ved in this National Stage
Attachment(s)  1) Notice of References Cited (PTO-892)  2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  3) Information Disclosure Statement(s) (PTO/SB/08)  Paper No(s)/Mail Date	4) Interview Summar Paper No(s)/Mail I 5) Notice of Informal 6) Other:	Date

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# **DETAILED ACTION**

## Election/Restrictions

- 1. Applicant's election with traverse of Group II, Species I deemed readable on claims 3 26, 37, and 38 in the reply filed on 1/25/2007 is acknowledged. The traversal is on the ground(s) that the requirements for combination/subcombination according to the MPEP 606.05c have not been met. This is found persuasive and the restriction requirement between Groups I and II is withdrawn. However, Applicant elected Species I, and claims 14 17 are drawn to species II with reflective surfaces and reflected energy and will be withdrawn. Further, Applicant failed to traverse the restriction requirement between Groups I and II with Group III. The restriction between Groups I II and III is still deemed proper and is therefore made FINAL.
- 2. Claims 14 17, 27 36, 39, and 40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

## Claim Objections

3. Claim 12 is objected to because of the following informalities:

Claim 12 recites, "wherein said plurality of emitters comprises: a first emitter; a first detector..." However, the "emitters" don't comprise "detectors" as they are separate elements.

A rewording of the claim language is required to clarify. Appropriate correction is required.

## Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

- 5. Claims 1 4, 10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Churchill et al. (US 5,352,090).
- 6. For claims 1 and 2, Churchill et al. discloses a vertical takeoff and landing aircraft with two rotors (12, 14) and a first detector (18) generating rotor signals indicative of a first position of a first rotor of the aircraft, the plurality of rotors lifting the aircraft; and a controller coupled to said detector, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 33, it is noted some form of controller is inherent because the rotational speed of the rotors is adjusted), but fails to teach of a plurality of detectors wherein a second detector generates a second rotor signal indicative of a second position of a second rotor. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Churchill et al. to comprise a second detector which generates a second rotor signal indicative of a second position of a second rotor in order to have tracking information for both rotors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co.

  v. Bemis Co., 193 USPQ 8. Assuming arguendo that the "controller" is not inherent, see further rejection under 35 USC 103 in paragraph 11.
- 7. For claims 3 and 13, Churchill et al. discloses a vertical takeoff and landing aircraft comprising: an aircraft fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a first detector (18) generating rotor signals

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indicative of a first position of a first rotor of the aircraft, and a control coupled to said detector, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 – 33, it is noted some form of controller is inherent because the rotational speed of the rotors is adjusted), but fails to teach of a plurality of detectors wherein a second detector generates a second rotor signal indicative of a second position of a second rotor. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Churchill et al. to comprise a second detector which generates a second rotor signal indicative of a second position of a second rotor in order to have tracking information for both rotors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. Assuming arguendo that the "controller" is not inherent, see further rejection under 35 USC 103 in paragraph 11.

- 8. For claim 4, Churchill et al., as modified, discloses the apparatus as in claim 3 wherein said plurality of detectors are coupled to said aircraft fuselage and are directed towards said plurality of rotors.
- 9. For claim 10, Churchill et al., as modified, discloses the apparatus as in claim 3 further comprising a plurality of emitters (12a, 14 (rotor blades)), said plurality of detectors generating said rotor signals in response to emitted energy from said plurality of emitters. It is noted, the rotor blades emit pressure pulses of air which in its broadest reasonable interpretation is being viewed as "emitted energy" thereby encompassing the scope of the claim.
- 10. For claim 12, Churchill et al., as modified, discloses the apparatus as in claim 10 wherein said plurality of emitters comprises: a first emitter; a first detector generating a first rotational

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position signal indicative of a first position of a first rotor in response to emitted energy from said first emitter; a second emitter; and a second detector generating a second rotational position signal indicative of a second position of a second rotor in response to emitted energy from said second emitter; said controller coupled to said first detector and said second detector and adjusting rotational speed of said plurality of rotors in response to said first rotational position signal and said second rotational position signal.

- 11. Claims 1 4, 10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Churchill et al. (US 5,352,090) in view of Skutecki (US 4,628,4550).
- 12. For claims 1 and 2, Churchill et al. discloses a vertical takeoff and landing aircraft with two rotors (12, 14) and a first detector (18) generating rotor signals indicative of a first position of a first rotor of the aircraft, the plurality of rotors lifting the aircraft; and adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 33), but fails to teach of a plurality of detectors wherein a second detector generates a second rotor signal indicative of a second position of a second rotor. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Churchill et al. to comprise a second detector which generates a second rotor signal indicative of a second position of a second rotor in order to have tracking information for both rotors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. But, Churchill, as modified, fails to explicitly teach of a controller coupled to said detector, said controller adjusting said rotors speeds. However, Skutecki discloses a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art

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at the time the invention was made to modify Churchill et al., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the craft as taught by Skutecki (column 1, lines 20 - 25).

For claims 3 and 13, Churchill et al. discloses a vertical takeoff and landing aircraft 13. comprising: an aircraft fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a first detector (18) generating rotor signals indicative of a first position of a first rotor of the aircraft, and a controller coupled to said detector, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 - 33,), but fails to teach of a plurality of detectors wherein a second detector generates a second rotor signal indicative of a second position of a second rotor. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Churchill et al. to comprise a second detector which generates a second rotor signal indicative of a second position of a second rotor in order to have tracking information for both rotors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8. But, Churchill, as modified, fails to explicitly teach of a controller coupled to said detector, said controller adjusting said rotors speeds. However, Skutecki discloses a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Churchill et al., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the craft as taught by Skutecki (column 1, lines 20 - 25).

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- For claim 4, Churchill et al., as modified, discloses the apparatus as in claim 3 wherein 14. said plurality of detectors are coupled to said aircraft fuselage and are directed towards said plurality of rotors.
- For claim 10, Churchill et al., as modified, discloses the apparatus as in claim 3 further 15. comprising a plurality of emitters (12a, 14 (rotor blades)), said plurality of detectors generating said rotor signals in response to emitted energy from said plurality of emitters. It is noted, the rotor blades emit pressure pulses of air which in its broadest reasonable interpretation is being viewed as "emitted energy" thereby encompassing the scope of the claim.
- For claim 12, Churchill et al., as modified, discloses the apparatus as in claim 10 wherein 16. said plurality of emitters comprises: a first emitter; a first detector generating a first rotational position signal indicative of a first position of a first rotor in response to emitted energy from said first emitter; a second emitter; and a second detector generating a second rotational position signal indicative of a second position of a second rotor in response to emitted energy from said second emitter; said controller coupled to said first detector and said second detector and adjusting rotational speed of said plurality of rotors in response to said first rotational position signal and said second rotational position signal.
- Claims 1-6, 8, 10-13, and 26 are rejected under 35 U.S.C. 103(a) as being 17. unpatentable over Frank (US 3,515,485) in view of Churchill et al. (US 5,352,090) and Skutecki (US 4,628,455).
- For claims 1-3, Frank discloses a vertical takeoff and landing aircraft comprising: an 18. aircraft fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least

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one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a first detector (24, column 7, lines 5 - 19)) generating rotor signals indicative of a first position of a first rotor of the aircraft; a second detector (24, column 7, lines 5 - 19) generating rotor signals indicative of a first position of a second rotor of the aircraft; and an inherent generic controller/controls capable of operating the aircraft and adjusting the defective blade (column 9, lines 10 - 20), but fails to explicitly teach the controller coupled to said detectors, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals. Churchill et al. teaches of a rotor tracking system that adjusts a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 - 33). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Frank to adjust the rotor speeds in response to rotor signals from a tracking system in order to alleviate the aerodynamic imbalance as taught by Churchill. But, Frank, as modified, fails to explicitly teach of a controller coupled to said detector, said controller adjusting said rotors speeds. However, Skutecki discloses an autopilot system comprising a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Frank., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the craft as taught by Skutecki (column 1, lines 20 - 25).

19. For claim 4, Frank, as modified, discloses the apparatus as in claim 3, wherein the detectors are coupled to said aircraft fuselage and have portions in the direction of a plurality of rotors thereby encompassing the scope of the claim.

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20. For claim 5, Frank, as modified, discloses the apparatus as in claim 3 wherein the plurality of detectors are coupled to said plurality of rotors and directed towards said aircraft fuselage (figure 1 and 5).

- 21. For claims 6 and 8, Frank, as modified, discloses the apparatus as in claim 3, but fails to teach the detectors detect infrared energy. However, Frank (figure 7) discloses an alternate system using lasers. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Frank to comprise of a laser based system in order to provide an virtually invisible light source for stealth at night. Furthermore, it would have been a matter of obvious design choice from one of ordinary skill in the art to substitute equivalents.
- 22. For claim 10, Frank, as modified, discloses the apparatus as in claim 3, comprising a plurality of emitters (72, 72'), said plurality of detectors generating said rotor signals in response to emitted energy from emitters.
- 23. For claim 11, Frank, as modified, discloses the apparatus as in claim 3, but fails to teach of an infrared system. However, Frank (figure 7) discloses an alternate system using lasers. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Frank to comprise of a laser based system in order to provide an virtually invisible light source for stealth at night. Furthermore, it would have been a matter of obvious design choice from one of ordinary skill in the art to substitute equivalents.
- 24. For claims 12, 13 and 26, Frank, as modified, discloses the apparatus as claimed comprising a first and second emitter (70, 72') and a first and second detector generating rotational position signals from the rotors and the controller controlling the rotational speed of the rotors.

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- Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over 25. Frank in view of Churchill and Skutecki as applied to claim 3 above, and further in view of Engels et al. (Us 5,205,710).
- For claim 7 and 9, Frank, as modified, discloses the claimed apparatus as in claim 3, but 26. fails to teach of an emitter that emits ultra violent energy. However, Engles et al. discloses an emitter for helicopter rotors that teaches of using infrared or ultra violent energy. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Frank to use ultra violent energy as an equivalent alternative energy source to infrared as a matter of design choice as taught by Engles (column 2, line 20).
- Claims 3, 18 25, and 37 and 38 are rejected under 35 U.S.C. 103(a) as being 27. unpatentable over Bass et al. (US 6,789,764) in view of Frank (US 3,515,485), Churchill et al. (US 5,352,090) and Skutecki (US 4,628,455).
- For claim 3, Bass et al. discloses a dual-flight tandem rotor wing comprising an aircraft 28. fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a controller/(generic controls) capable of adjusting rotational speed of a plurality of rotors, but fails to teach of a plurality of detectors generating rotor signals indicative of positions of said plurality of rotors; and the controller coupled to and adjusting rotation speed of said plurality of rotors in response to said rotor signals. However, Frank discloses a vertical takeoff and landing aircraft comprising; a first detector (24, column 7, lines 5 - 19)) generating rotor signals indicative of a first position of a first rotor of the aircraft; a second detector (24, column 7, lines 5 - 19) generating rotor signals indicative of a first position of a

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second rotor of the aircraft; a first and second emitter (70, 72') and a first and second detector generating rotational position signals from the rotors and adjusting the defective blade (column 9. lines 10-20). Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bass et al. to comprise of a plurality of detectors generating rotor signals indicative of positions of said plurality of rotors in order to monitoring and adjust defective blades as taught by Frank (column 9, lines 10-20). But, Bass et al., as modified, fails to explicitly teach the controller is coupled to said detectors, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals. Churchill et al. teaches of a rotor tracking system that adjusts a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 - 33,). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bass et al. to adjust the rotor speeds in response to rotor signals from a tracking system in order to alleviate the aerodynamic imbalance as taught by Churchill. But, Bass et al., as modified, fails to explicitly teach of the controller coupled to said detectors, said controller adjusting said rotors speeds. However, Skutecki discloses an autopilot system comprising a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bass et al., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the

29. For claims 18 and 19, Bass et al., as modified, discloses the apparatus as in claim 3, wherein said controller adjusts gas flow to said plurality of rotors; at least one gas control valve,

craft as taught by Skutecki (column 1, lines 20 - 25).

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said controller adjusting rotational speed of said plurality of rotors via said at least one gas control valve (column 3, line 35 – column 4, line 35),

- 30. For claim 20, Bass et al., as modified, discloses the apparatus as in claim 3 comprising at least one brake device (column 4, lines 35 40, Bass).
- 31. For claims 21 and 22, Bass et al., as modified, discloses the apparatus as in claim 3 comprising a drag device comprising a flap (column 4, lines 35 40, Bass) wherein the controller is capable of adjusting the flap.
- 32. For claims 23 and 25, Bass et al., as modified, discloses the apparatus as in claim 3 wherein the controller switches said plurality of tandem rotor/wings between a vertical lift mode and a fixed wing mode (column 8, lines 30 43, Bass).
- 33. For claim 24, Bass et al., as modified, discloses the apparatus as in claim 3 comprising a transitional lift wing (16).
- 34. For claim 37, Bass et al. discloses a dual-flight tandem rotor wing comprising an aircraft fuselage; a plurality of hubs mechanically coupled to said fuselage and rotated by at least one engine; a plurality of rotors mechanically coupled to said plurality of hubs and propelling and lifting said aircraft fuselage; a controller/(generic controls) capable of adjusting rotational speed of a plurality of tandem rotor/wings, but fails to teach of a plurality of detectors generating rotor signals indicative of positions of said plurality of rotors; and the controller coupled to and adjusting rotation speed of said plurality of rotors in response to said rotor signals. However, Frank discloses a vertical takeoff and landing aircraft comprising; a first detector (24, column 7, lines 5 19) generating rotor signals indicative of a first position of a first rotor of the aircraft; a second detector (24, column 7, lines 5 19) generating rotor signals indicative of a first position

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of a second rotor of the aircraft; a first and second emitter (70, 72') and a first and second detector generating rotational position signals from the rotors and adjusting the defective blade (column 9, lines 10-20). Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bass et al. to comprise of a plurality of detectors generating rotor signals indicative of positions of said plurality of rotors in order to monitoring and adjust defective blades as taught by Frank (column 9, lines 10 - 20). But, Bass et al., as modified, fails to explicitly teach the controller coupled to said detectors, said controller adjusting a rotational speed of at least one of said plurality of rotors in response to said rotor signals. Churchill et al. teaches of a rotor tracking system that adjusts a rotational speed of at least one of said plurality of rotors in response to said rotor signals (column 3, lines 23 - 33,). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bass et al. to adjust the rotor speeds in response to rotor signals from a tracking system in order to alleviate the aerodynamic imbalance as taught by Churchill. But, Bass et al., as modified, fails to explicitly teach of a controller coupled to said detector, said controller adjusting said rotors speeds. However, Skutecki discloses an autopilot system comprising a controller that adjusts rotor speeds after receiving rotor signals. Thus, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify Bass et al., to comprise of a controller for controlling rotor speeds in order to control the airspeed and vertical path of the craft as taught by Skutecki (column 1, lines 20-25).

35. For claim 38, Bass et al., as modified, discloses a first detector vertically in-line with a first emitter, corresponding with a first tandem rotor/wing, and generating a first tandem rotor/wing signal; and a second detector vertically in-line with a second emitter, corresponding

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with a second tandem rotor/wing, and generating a second tandem rotor/wing signal; said controller adjusting rotational speed of said first tandem rotor/wing relative to said second tandem rotor/wing in response to a comparison between said first tandem rotor/wing signal and said second tandem rotor/wing signal (figure 5, Churchill).

#### Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. SEE PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua J. Michener whose telephone number is 571-272-1467. The examiner can normally be reached on Monday through Friday 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 571-272-7045. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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